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ABSTRACT

The Northwest Wisconsin Technical College Electronic Campus (NWTC/EC) is an electronic bulletin board system that delivers courses via IBM microcomputer and telephone modem. Computer-based course delivery focused on the inservice training for economic development, student services, division coordinators, and branch campus departments at NWTC to ensure familiarity with and support of the promotion of computer delivery. Inservice sessions were held on the use of the computer-based course delivery system for relevant NWTC departments to promote the system. NWTC/EC offers standard features plus some unique online capabilities to its users: mail videotape checklist system; supplemental book resource checkout system; articles, news scans, forums, databases, and networks; and other sources of shareware. Appropriate computer-delivered courses are student-centered activities comprised of reading and writing. Total student activity hours for reading/writing/responding are comparable to live campus classrooms. The EC provides students with a self-directed, cross-disciplinary, exploratory experience. Educators should use relevant practices and values to enhance the system. (A course outline for the computer-based course, "Technology 2000," is included.) (NLA)

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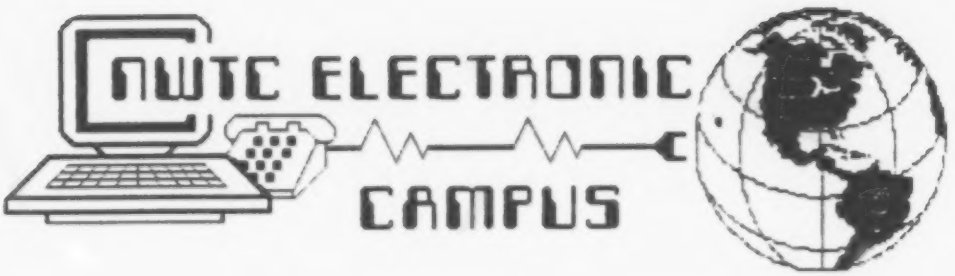

A MODEL COMPUTER/MODEM COURSE DELIVERY SYSTEM

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Northeast Wisconsin Technical College
VEA 1989-90 Program Improvement Products for Grant: 13-158-150-250
Activity #5.(a) 1.: "Inservice District Departments

Title: Model Video/Computer Based Alternative Delivery System

Product(s) Description and Intended Use or Other Project Results

This subcomponent of Activity #5, marketing of computer based course delivery, focused on the inservicing of NWTC departments such as economic development, student services, ACE coordinators, division coordinators, branch campuses, etc. to insure familiarity and support in the promotion of computer delivery. In accomplishing this objective the Instructor/Course designer first held individual hands-on inservice sessions on the use of the computer based course delivery system for the NWTC Vice President for Instructional Services and Campus Operations, who oversees the three academic divisions and student services areas, and the Vice President for Economic Development, who oversees ACE, economic development (including the Center for Business and Industry), and branch campuses. The Vice Presidents then promoted the Alternative Delivery System in administrative and staff meetings in their respective areas. Because of the chief utilization of the System by ACE and the Center for Business and Industry, the Instructor/Course designer inserviced these area directly during departmental meetings. A copy of outline of material presented at these inservice meetings is attached. The intended result of this activity is that District staff who are in a position to directly promote the Alternative Delivery System with the general public and business and industry now have a better understanding of the merits and potential of the System and will work to promote its utilization.

INTRODUCTION

The Northeast Wisconsin Technical College Electronic Campus (NWTC/EC) is the result of a project during the 1989-90 fiscal year. It is an IBM-PC configured electronic bulletin board system (BBS) designed to deliver courses via microcomputer and telephone modem.

The purpose of the project was to set up a pilot BBS delivery system and report on the experiences gained to interested parties. This document is intended to serve as an overview of those experiences with attendant recommendations for schools wishing to set up similar BBS delivery systems.

MINIMUM HARDWARE SYSTEM CONFIGURATION

From the beginning, it was intended to explore the lower limits of the minimum practical hardware system (and concomitant expense). Therefore, the following hardware was used for the project:

"Host" desktop microcomputer:
- IBM-PC/AT compatible; 12 mhz; 1 megabyte of memory
- 40 megabyte hard drive; one 3 1/2" & one 5 1/4" floppy drive
- one 2400 baud Hayes-compatible modem
- VGA color monitor/color adapter card
- 9-pin dot matrix printer
- single dedicated phone line

"Field" laptop microcomputer:
- Toshiba 1200HD (AC or battery power)
- 20 megabyte hard drive; one 3 1/2" floppy (built-in)
- one 5 1/4" floppy drive (external)
- built-in 2400 baud modem
- portable dot matrix printer

Additional accessory hardware (for desktop PC):
- fax card
- voicemail adapter card
- scanning device

RECOMMENDED HARDWARE FOR "EXPANDED" DELIVERY SYSTEM

Based on experience gained during this project, it is highly recommended that institutions planning on delivering courses/services via a similar BBS give consideration to a more sophisticated hardware configuration. While the system used here is very capable for a "startup" or pilot system, the need for multi-tasking, faster processing speed, more hard disk capacity, and multiple modems/multiple phone lines quickly becomes apparent. If the number of courses goes beyond 5 or 6, a "host" desktop should be of the newer "386/486" generation of IBM compatibles, with a large capacity hard drive of 100+ megabytes of storage, and an eight line (or more) phone/modem capacity. This would allow more than one user to be "online" simultaneously, and also allow "real time" multi-user/instructor online conferences.

PROJECT SOFTWARE

The software involved in this project can be divided into three general catgories: The BBS Host, Support Utilities, Support Applications.

The BBS Host: After trying several packages (including TBBS and RBBS; two of the most well-known) and talking with several BBS System Operators (Sysops), it was decided to use a package called WildCat! for this project. In the opinion of the Project Technician and Project Director, it offers the optimum combination of features, ease of setup, and ongoing ease of maintenance. A registered copy of WildCat! costs approximately $125. A limited time trial version is available for downloading from the NWTC/EC BBS.

Support Utilities: The producers of WildCat! also produce a series of utilities which are very useful for routine maintenance and statistical report functions of the BBS ($100 for the combo of four main utility packages; less possible $50 discount if purchased via coupon included with WildCat! main program). Other useful utilities should include a text editor (for ASCII files), an ANSI graphics drawing program (for creating color graphics screens to appear on the board), and a complete library of up/download protocols (Xmodem, Ymodem, Zmodem, PUMA, etc.) in order to assure maximum compatibility with user preferences. Most of these "support" utilities are available for $15-50.

Support Applications: This is where personal preference and budget will have the most influence. The host Sysop and/or Instructor may have a favorite word processor or telecommunications package for example. Other useful packages include databases (for various record keeping functions), form designers, mailing list packages, authoring systems (for interactive courses), and hard disk backup/file recovery/repair and maintenance packages.

THE DESIGN OF THE BBS DELIVERY SYSTEM

The Electronic Campus has three main "areas," all accessed from the Main Menu. For a general user orientation to the NWTC-EC and a catalog of [alternative-delivered] courses, there's the "INFO CENTER." The electronic messages between users are handled in the "MAIL ROOM." and files available for up/downloading are stored in various catagory libraries off the "FILE MENU."

Over the past several years of my experience with PC/modem networking, I've enjoyed the sense of community present on virtually all systems from the big commercial providers like CompuServe, to the smallest PC home-based BBS. We have tried to create that same kind of environment in the design of the NWTC BBS by using the "Electronic Campus" simile with electronic "rooms" and "areas." We also decided to provide a wide selection of "shareware" software to attract users and provide another means of interaction.

While the primary purpose of the NWTC/EC is to deliver courses and provide supplemental resources for students taking those courses, we wanted to draw a wider user population. Therefore, it was decided to provide a level of (access) security which allows use of all BBS features except course-specific files (assignments, lectures, student -

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instructor communication, etc.). This is intended to attract users from local business, industry, and the general population who may be interested in the shareware files, access to the "electronic library" (where they can download articles about new/emerging technologies, and/or place reserve orders for books and videotapes related to new technologies ....for campus pickup or mailout), and the electronic message service.

PROMOTION/POTENTIAL MARKET

A Consumer Electronics Market Survey for the zipcodes in the 8 counties touched (at least partially) by our district was purchased from a professional service available via CompuServe. Among other computer-related information it revealed that an estimated 2100+ modems are in place in area households. This does not include business and school locations.

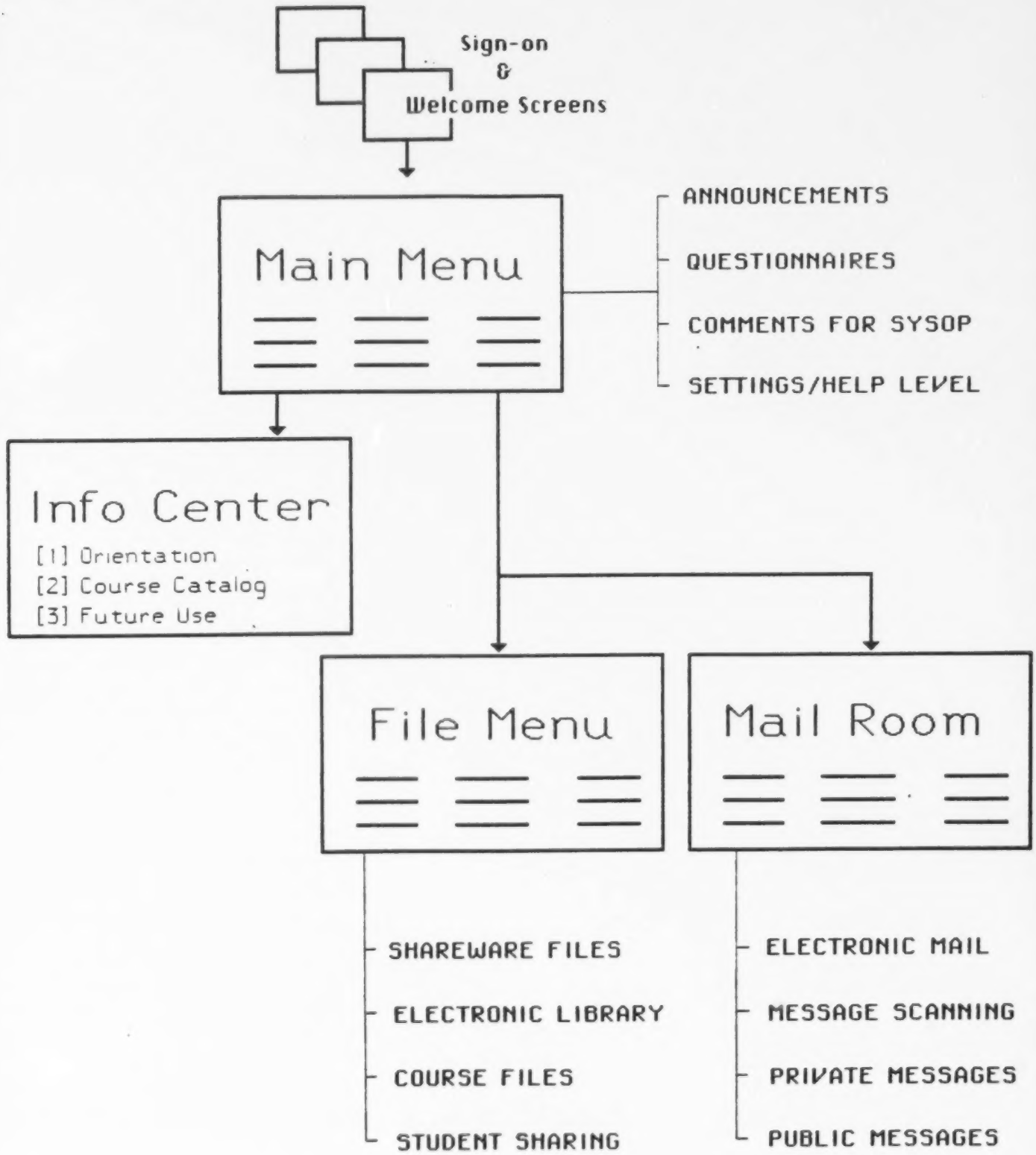
We view the market as two-tiered. First, the existing base of those users already computer/modem/BBS literate, but are new to using their equipment for educational delivery. Second, potential users who need the flexibility of an alternative course delivery system, but may or may not be computer literate.

The strategy for the first group involves promotion of the NWTC/EC via other local BBS systems, local computer user groups, newsletters, NWTC campus classes, area computer stores. For this computer/modem literate population the attraction will be the uniqueness of the NWTC/EC BBS design, colorful menus, and special services (such as the electronic library) as well as the traditional appeal of a good selection of new shareware and E-mail. This group tends to want techno-dazzle and views the course delivery potential as just another one of many features. It is this technological focus that also influenced the decision to offer Technology 2000 (a 2-credit course about new/emerging technologies) as the first class via the NWTC/EC.

The approach for the second group must place educational delivery convenience first (with "technological" features secondary), since this group will have to invest time/effort in becoming more computer/modem literate before using the system. Promotion will be through more traditional channels of mailers, brochures, flyers, etc. emphasizing "anytime" registration, learn-at-home/office convenience, flexibility, and other features common to most alternative delivery systems. It is hoped that the "new" use for their home/office computers and the "futurist" content of the first Technology 2000 course will also be attractive. Promotional materials will emphasize "help getting started" available via a special orientation mailout package and voice telephone contact with the Sysop and Instructor. If the demand warrants it, campus computer/modem/telecommunications short-courses can be conducted.

SYSTEM OVERVIEW

The illustration on the following page gives a simplified graphic representation of the main menus and sub-features of the NWTC/EC BBS in its current configuration:


Sign-on
&
Welcome Screens
Main Menu
ANNOUNCEMENTS
QUESTIONNAIRES
COMMENTS FOR SYSOP
SETTINGS/HELP LEVEL
Info Center
[1] Orientation
[2] Course Catalog
[3] Future Use
File Menu
Mail Room
SHAREWARE FILES
ELECTRONIC LIBRARY
COURSE FILES
STUDENT SHARING
ELECTRONIC MAIL
MESSAGE SCANNING
PRIVATE MESSAGES
PUBLIC MESSAGES

ONLINE ORIENTATION

Once a user signs on to the system, s/he may read an on-screen explanation of the NWTC/EC by going to the Info Center menu and selecting [1] Orientation. A series of text screens then provides information about what the NWTC/EC is, how it works, features available for the three public security levels (new user, registered user, registered student), and where to get more "help" (online, voice phone, voice message, fax, print and/or person resources).

ONLINE COURSE OUTLINES

A registered user (one security level lower than a registered student) may download a text file containing an outline of a course offered via the BBS. This allows registered users to "preview" a course before committing to the registration process. All they need to do is go to the File Menu and select area [B] - Elec. Campus Course Outlines, then select the appropriate file to download to their own machine.

The following text is the outline for Technology 2000 ....an example of what the student would receive:

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Course Outline: TECHNOLOGY 2000 (196-175) 2 credits

This course is available via the Northeast Wisconsin Technical College Electronic Campus or via "live" traditional classroom delivery.

Text: CONTEMPORARY TECHNOLOGY: Innovations, Issues, and Perspectives
by Linda Rae Markert (pub. Goodheart-Willcox)

Unit Topics:

1. Technology Defined
2. Technology Past/Future
3. Technology at Work: The Future of Industry
4. Technology at Work: The Information Age
5. Technology and the Future of Education
6. Technology and Future Health Care Issues
7. Biotechnology
8. Technology in the Home
9. Future Societal Impacts of Technology
10. Dealing With Change
11. What the Futurists Have to Say (and why)
12. Technology and the Global Community

The overall intent of the course is to help the participant come to grips with the causes and effects of technological change in both a global and personal sense.

The Electronic Campus version of the course is set up as follows:

a. There are 13 files in the TECH2000 area of the File Menu (an Intro file plus one file for each of the 12 Units of the course).

b. Each file contains a brief lecture(text), reading assignment, "work" assignment, and a list of supplemental resources. Most reading assignments are from the textbook. Typical "work" assignments involve written responses about the Unit topic, which are uploaded when completed. These assignments might be: answering prepared questions, conducting some interviews for summary and reaction, or some other demonstration of a grasp of the topic. The "supplemental" resources include topical articles in the Electronic Library files (which can be downloaded), videotapes which can be requested via the BBS for campus reservation or mail-out service (a list of tapes and summary of contents is available for download), or books from the NWTC Future Studies Collection (available via same procedure as videotapes).

c. Learning activities include:
   * Reading (assigned text, supplement materials)
   * Viewing (videotapes, recommended TV shows, documentaries, etc.)
   * Interviewing (coworkers, boss, friends, relatives, neighbors)
   * Writing (assignments)
   * Interacting (via BBS with instructor, other students)

d. Grades are determined by the uploaded assignments. Students completing the "core" assignments will be graded in the B-C-D-F range, depending on how thoroughly they demonstrate a grasp of the topic using the core resources of the Unit files downloaded, the textbook, and the basic assignments. Students wishing to move up to the A-B range should plan on additional work involving use of the "supplemental" resources and some self-initiated assignments.

e. Registration is open at anytime, and students may work at their own pace. They have one full semester beyond the one in which they register to complete the work and still receive full credit.

IF YOU WOULD LIKE MORE INFORMATION ABOUT THE COURSE, OR A REGISTRATION PACKAGE VIA MAIL ....LEAVE A MESSAGE VIA THE BBS FOR THE INSTRUCTOR, DAVE MOLNAR. OR, IF YOU PREFER VOICEPHONE, CALL (414) 498-5717 AT THE NWTC GREEN BAY CAMPUS.

THE "LIVE" CLASSROOM VERSION OF THE COURSE HAS THE SAME TOPICAL CONTENT, BUT DEPENDS MUCH MORE ON THE TRADITIONAL LECTURE/DISCUSSION WHICH TAKES THE PLACE OF THE DOWNLOAD FILES, E-MAIL MESSAGES, ETC. ON THE BBS. STUDENT ASSIGNMENTS ARE VIRTUALLY THE SAME IN THE ENDS, IF NOT THE MEANS.

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UNIQUE FEATURES OF THE NWTC/EC

Any BBS offering courses to remote locations via PC/modem would include "standard" features like up/download files (for assignments, shareware, etc.), electronic messaging, and some form of announcement/newsletter for its users. We think the NWTC/EC goes a couple of steps beyond that standard format by offering some unique capabilities to its users:

ONLINE/MAIL VIDEOTAPE CHECKOUT SYSTEM -

Via off-air taping copyright agreements with The Discovery Channel (TDC), The Learning Channel, and purchase of the CNN/Britannica Video Magazine Series (Volumes 1 & 2), the NWTC/EC has built up a library of 30+ videotapes about various new and emerging technologies to serve as supplemental resources for students taking Technology 2000. The TDC tapes can be used for 1 year from tape date, and then must be purged from the system library list and erased. However, new programs are being taped weekly ....thereby assuring a constant flow of current material. The Learning Channel has a variety of retention limits ranging from one week to "in perpetuity." The NWTC/EC gives strongest consideration to limits of at least one semester or longer to avoid constant updating of listings.

A current list of available supplemental videotapes is maintained in the online electronic library with the filename "VIDEOLST.ZIP" or "VIDEOLST.ASC" which can be downloaded by any registered user. A tape may be requested for campus pickup or mailout service by leaving a request in the Mail Room for a ficticious person named "Marion Librarian." The NWTC campus Learning Resource Center has its own password access to the BBS so authorized personnel can periodically check the Mail Room for messages to "Marion" and either fill the request, or leave a reply message for the user explaining why the request couldn't be honored.

ONLINE SUPPLEMENTAL BOOK RESOURCE CHECKOUT SYSTEM -

Over the past several years, I have built up a "Future Studies" collection in the campus Learning Resource Center. Most of the books have been purchased from the World Future Society Futurist Bookstore.

A selected list of those books was compiled to serve as possible supplemental readings for students taking Technology 2000 (and any other interested parties). The listing shows the title, author, publication date, library call number, and a brief content synopsis. The file is stored in the online electronic library with the filename "BOOKLIST.ZIP" or "BOOKLIST.ASC" which can be downloaded by any registered user. Reservation requests are handled the same way as for videotapes.

ONLINE ARTICLES, NEWS SCANS, FORUMS, DATABASES, NETWORKS -

NWTC belongs to a variety of public and commercial PC/modem networks and BBS's around the country. These include CompuServe, the University of Washington's ISAAC system, NASA's SPACELINK BBS, EasyNet and others. These sources provide current articles, text of forum discussions, software, newsletters, and other "information age" materials in electronic format which can be directly (or with minor conversion) stored on the NWTC/EC for use by students or general users in an educational context. In virtually every case where permission was sought because of copyright concerns, not only was permission granted, but we were encouraged by the source to "spread the word."

ONLINE AND OTHER SOURCES OF SHAREWARE -

Not every institution which seeks to set up and run a BBS delivery system will be as fortunate as we were. We not only found a local private BBS with a large collection of shareware; we were able to negotiate the direct loading of our choices in the collection directly onto our system hard drive via archive floppies (rather than spending a couple of hundred of hours downloading via modem @ 2400 baud). This was a boon to our startup both in terms of quantity/quality of software and time saved due to the courtesy of the Sysop from the other system. Because of this good fortune, we were able to startup with several hundred quality shareware programs immediately available to our new users. The moral of the story is .....check with your local computer gurus, they may know of a similar source.

Failing that, there is another low-cost source of prescreened shareware. A large BBS in Elm Grove, Wisconsin, called EXEC-PC has 100 incoming phone lines available 24 hours a day with over 100,000 files collected in their file system (voice phone 414 789-4200). To get full access to all files there is an annual membership fee of $60; but other than that and any telephone toll charges for online time, there is no other expense (even the toll charges can be minimized by using packet networks, or even just calling nites/weekends).

"APPROPRIATE" COURSES FOR DELIVERY VIA THIS SYSTEM

The "best" type of courses for delivery via PC/modem are those involving student-centered activities comprised of reading and writing. This is because of the limitations of a text-transmission system such as a BBS. Some day when we have "virtual reality" computers (of which experimental models now exist) with 3-D viewer goggles and tactile feedback gloves for the user, we may be able to teach welding or surgical techniques via computer/telecom links. But not with today's technology (and budget) constraints.

As pointed out in the sample Course Outline for Technology 2000 (pages 5-6), this course has student activities involving reading, viewing, interviewing, writing, and interacting. Attempts were also made to "vary the stimulus" and provide more depth-of-content via the supplemental resources of videotapes, books, articles, and E-mail messages. However, the fact remains that the primary communication between students/instructor is remote transmission of text. This, then, is the primary trade-off of this delivery system .....giving up face-to-face interaction in favor of non-time-or-location-bound usage by the student.

SUMMARY AND PONTIFICATION

The design of the BBS version of the pilot course is such that the "total student activity hours" for reading/writing/responding will be comparible to a "live" campus classroom offering (considering ATC time and outside homework). And, just as the student's role is somewhat different in a BBS course (requiring more individual discipline and motivation), so is the BBS-style instructor's role. S/he must more carefully structure the activities to assist the student with "independent" exploration of the topic, rather than the classic

drill-and-test approach. Unfortunately, a major attraction of the traditional industrial model face-to-face educational delivery system was the opportunity to totally control the student's environment. The highest values involved conformity to a "standardized" curriculum, with the instructor being the ULTIMATE SOURCE of knowledge.

Virtually all the current literature regarding employment in the Information Age refers to the need for workers who are critical and creative thinkers ...independent, explorative, and adaptable to change. The era is past for the industrial model education system which valued overspecialization and isolation of job functions (and academic "subjects") and needed workers who were prepared to do dull, mindless work which rarely changed in their lifetime.

A nontraditional delivery system such as the Electronic Campus has the potential to provide students with an Information Age, self-directed, cross-disciplinary, exploratory experience which can pay dividends far beyond "content" competency. That is, as long as the "educators" don't use it to perpetuate outmoded practices and values.

If the proverbial "bean counters" had their way, we'd be using the system to "track" student hours online vs offline, count student keystrokes used for writing responses to assignments (to get an "objective" measure to be used in "grading"), and assigning strict security levels so that no one could see Unit 2 BEFORE they completely finished Unit 1 (to the satisfaction of the instructor).

To use this technology in such a way would be a travesty equivalent to using HDTV video to transmit live "talking face" lectures via satellite link to classrooms where they are taped for later use.

(Actually, there are multiple travesties in that statement, and if you don't see at least 3, don't ever call me to help you set up a BBS)

-endfile-